2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118905

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RECRYSTN. OF THE GAMMA PRIME PHASE WAS STUDIED IN NI SUB3 AL-NI SUB3 NB ALLOYS BY THE X-RAY POWDER METHOD. A CONVENTIONAL TEMP. OF RECRYSTN. WAS DETD., I.E. THE ANNEALING TEMP. OF DEFORMED POWDER AT WHICH AN UNDISTORTED GRAIN GROWS FOR AN HR UP TO THE DIMENSIONS OF 10 PRIME NEGATIVE4 -10 PRIME NEGATIVE 3 CM. AN INCREASE IN THE NI SUB3 NB CONCN. INCREASES THE RECRYSTN. TEMP. OF THE GAMMA PRIME PHASE. THIS IS PROBABLY DUE TO THE DECELERATING EFFECT OF NB ON THE DIFFUSION MOBILITY OF ATOMS IN THE NI SUB3 AL ALLOY.

FACILITY: INST. PROBL. MATERIALOVED., KIEV. USSR.

UNCLASSIFIED

USSR UDC 621.357.12.035.2

CHUPRINA, V. I., FINKEL'SHTEYN, S. D., RYABUKHIN, A. G., GRISHAYENKOV, B. G., GAVRILOV, B. A.

"Mechanism of the Protective Effect of Lithium during Anode Oxidation of Porous Nickel"

Tr. Kurgan. mashinostroit. in-ta (Works of the Kurgan Machine Building Institute), 1971, vyp. 17, pp 80-84 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L259)

Translation: A study was made of the mechanism of the protective effect of Li during anode oxidation of cast porous Ni-electrodes under the conditions of electrolysis of water. It is demonstrated that effective inhibition of the process of anode oxidation of the Ni arises from the formation of a thin film containing solid solutions of LiO_2, NiO on the Pb electrodes.

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CHUPRINA, V. I.

Aeroclimatology

JPRS 54974
19 Jan 72

UDC 551.510.528(98)(99)

PECULIARITIES OF TROPOPAUSE FORMATION OVER THE POLAR REGIONS

[Article by V. I. Chuprina, Scientific Research Institute of Aeroclimatology; Moscow, Meteorologiya i Gidrologiya, Russian, No 11, 1971, submitted 11 February 1971, pp 38-42]

An explanation of the tropopause position over the Arctic and Antarctic is presented.

In a number of papers [4, 17, 24, 25] it has been theoretically demonstrated, and empirical data on the greater part of our planet confirms, that the higher the temperature of the lower troposphere, the higher the position of the tropopause. It has also been demonstrated that a cold troposphere and a warm lower stratosphere correspond to a low tropopause, and a warm troposphere and a cold lower stratosphere correspond to a high tropopause. From this it follows that the tropopause has the highest altitude during the period of maximum development of convection, that is, it must occupy a higher position in the summer than in the winter.

However, over the Antarctic the tropopause occupies a higher position in the winter than in the summer, and the differences in altitude exceed 2 km. Consequently, the position of the Antarctic tropopause is not included in the proposed theoretical schemes.

A great deal of attention has been given to the study of this phenomenon. The complexity of the phenomenon and the weak elucidation of the internal regions of the Antarctic by aerological observations have not up to now permitted complete solution of these problems.

In references [1, 5, 10-16, 18, 23], the formation of the high tropopause over the Antarctic is explained by the effect of circulation and radiation factors. In reference [26] it is pointed out that the thermal conditions of the atmosphere over the Antarctic with "cooling" in the underlying surface and "warming" at the level of highest ozone content which moves upward toward the boundary of the atmosphere illuminated by the sun, raising the tropopause, determines its high position in the winter. However, the boundary of the atmosphere illuminated by the sun, on arrival of the polar night, rises rapidly to a greater altitude, and the effect of the heating on the variation in the position of the tropopause requires additional research.

USSR

UDC 539.385

VOLONTSEVICH, O. A., CHUPRININ, F. I.

"Device for Fatigue Testing in a Vacuum Under Irradiation"

V sb. Povedeniye materialov v usloviyakh vakuuma i nizk. temperatur (Behavior of Materials Under the Conditions of a Vacuum and Low Temperatures--collection of works), Khar'kov, 1972, pp 79-82 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6V1032)

Translation: The schematic and description of the device are presented. The unit comprises three parts (vacuum, mechanical and radiation), and it has the following characteristic features: 1) the radiation sources are not rigidly related to the remaining systems of the device; 2) four specimens can be subjected to cyclic cantilever ending simultaneously (two under irradiation and two shaded); 3) for simultaneous irradiation of the backside, the device is equipped with an aluminum mirror; 4) the specimens can be changed without disturbing the vacuum in the chamber. Fatigue tests were run on copper specimens in the air and in a vacuum (with and without radiation). The life in a vacuum was an order higher than in the air. A microstructural study demonstrated that irradiation in the investigated wave range does not introduce significant changes in the nature and distribution of the plastic flow on the surface of the specimens. The bibliography has 11 entries.

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AA0046405 E.V. CHUPRINYAK UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

242469 METHOD OF ELECTROMAGNETIC FLAW DETECTION

where above the surface of the tube (1) is placed a feeler composed of two induction coils (2) mounted at a fixed distance between them. The signals from the coils pass through amplifier (3) and go to logarithmic circuits composed of ballast resistors (4) and diodes (5).

The signal from the output of the unit equals the difference of logarithms and is proportional to the depth of defects irrespective of the variability of the gap between the feeler and the surface of the article.

27.11.67 as 1200815/25-28.E.V.CHUPRINYAK.SCIENTIFIC TESTING RES.INST. (8.9.69) Bul 15/25.4.69.Class 42k. Int.Cl.G 01 n.

18

Vsesoyuznyy Nauchno - Issledovatel'skiy Institut po Razrabotke Nerazrushayushchikh Metodov i Sredstv Kontrolya Kachestva Materialov

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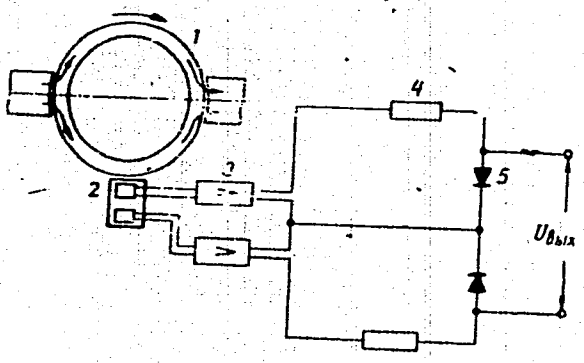
19781604

AA0046405



19781605

USSR

UDC 576.858.25.095.18

DZHIVANYAN, T. I., CHUPRINSKAYA, M. V., and LASHKEVICH, V. A., Institute of Poliomyelitis and Viral Encephalitis, Academy of Medical Sciences USSR, Moscow

"On Factors Affecting Manifestation of the DS-Index in Viruses of the Tick-Borne Encephalitis Complex"

Moscow, Voprosy Virusologii, No 1, 1973, pp 86-91

Abstract: Differences in plaque formation in response to DS (dextran sulfate) were studied in cultures of the Khipr, Absettarov (western strains), Khabarovskiy-17, Khabarovskiy-9, and Sof'in strains, and strain TP-21 (Langat virus) (eastern strains), all of the tick-borne encephalitis complex. Viruses were cultured in SPEV-44 and chick embryo cells with varying quantities of $NaHCO_3$ and normal calf serum in the presence or absence of chick embryo extract. DS either had no effect or reduced plaque size to varying degrees depending on the type of virus and culturing conditions. Addition of chick embryo extract to DS-treated cultures reduced plaque size further. By this method it was possible to differentiate western from eastern strains and strain TP-21 (Langat virus) from all other strains in SPEV-44 cell cultures. The ways in which culturing factors affect DS sensitivity remain unknown.

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USSR

UDC 621.372.6

CHUPROV, I. I.

"Analysis of Symmetric Bridge Four-Terminal Pair Networks"

Moscow, Elektrosvyaz', No 5, 1971, pp 63-66

Abstract: The possibility of using the mirror image method to calculate four-terminal pair network superhigh-frequency bridges with diagonal symmetry is demonstrated. Among the four-terminal pair networks, in particular, there are double tripletswhich find broad application in ultrahigh-frequency and superhigh-frequency engineering. Formulas are derived which permit significant simplification of determining the scattering matrices of the four-terminal pair network bridges. A double triplet circuit is calculated as an example.

The simplification of the scattering matrix is based on the consideration that when a bridge with diagonal symmetry is excited from one of the lateral arms it can be considered as a bridge with longitudinal symmetry the arms on the other side of which are loaded under matched loads.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200610015-4"

1/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--EMISSION FROM A WIDE SLIT ON A FINITE DIMENSION SCREEN -U-

AUTHOR-(03)-BOGDANOV, G.G., TSYBAYEV, B.G., CHUPROV, M.YE.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA, NO 3, 1970, PP 89-93

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION

TOPIC TAGS--ELECTRON EMISSION, WAVEGUIDE, RADAR SCREEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1296 STEP NO--UR/0108/70/000/003/0089/0093

CIRC ACCESSION NO--AP0123255

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123255

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULAS ARE DERIVED FOR CALCULATING THE CHARACTERISTICS OF EMISSION IN THE E PLANE OF A WIDE SLIT ON A SCREEN OF FINITE DIMENSION FOR CASES INVOLVING FLAT AND CURVED SCREENS. THE RESULTS OF G. N. KUCHERZHEVSKIY'S WORK AND THE THEORY OF EMISSION FROM THE OPEN END OF A WAVEGUIDE WERE USED AS THE BASES FOR ANALYSIS. EXPERIMENTAL RESULTS ARE GIVEN FROM VERIFYING THE DERIVED EXPRESSIONS. ORIGINAL ARTICLE: FOUR ILLUSTRATIONS AND THREE BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

USSR UDC: 621.317.343

CHUPRROV, I. I., ZUBKA, A. I., NAYDENOV, A. Ye., SVESHNIKOV, P. A.

"Measuring the S-Parameters of Remote Objects"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 62-63 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A348)

Translation: In developing panoramic instruments for measuring the parameters of remote objects, particular attention is given to selecting the scheme for connections of SHF units for simultaneous minimization of additional error and maximization of operational convenience. From the operational standpoint, the most suitable scheme is connection of remote objects through a section of high-uniformity cable whose electric length is compensated by introducing another cable in the reference arm of the meter, but in this case an error arises. More accurate but much less convenient is a circuit with a decoupling attenuator. Additional errors (on a fixed frequency) are almost completely eliminated when a double coupler (reflectometer) is brought out from the instrument to the object; the singularties of this method are pointed out. Bibliography of three titles. E. L.
1/1

USSR UDC: 629.78.015.076.6

SOLNECHNYY, E. M., CHUPRUN, B. Ye.

"Accounting for Uncontrolled Perturbations in Problems of Optimizing Space Vehicles"

Moscow, Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control. Tbilisi, 1968--collection of papers), 1972, pp 173-187 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.43)

Translation: The paper contains new formulations of optimization problems which account for the presence of uncontrolled perturbations. Accounting for such factors is important in particular in problems of bringing nuclear rocket reactors up to power, in problems of choosing an engine and its operating conditions for a spaceship, etc. A new formulation of the optimum control problem is proposed which requires predetermined constraints on motion of the system under the effect of any disturbances from a given class. An approximate algorithm is also proposed for finding the speed-optimum conditions when final stability is required. The numerical results of digital

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USSR

SOLNECHNYY, E. M., CHUPRUN, B. Ye., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik, 1972, pp 173-187

computer calculations are analyzed. Consideration is given to some problems of selecting a spaceship engine and its operating conditions with regard to the presence of uncontrolled perturbations (errors in the control law and external force fields). Two possible formulations are given for the optimum problem of minimizing the initial mass of a spaceship; these formulations are analytically solved and the results are compared with each other and with the results of solution of the "classical" problem. Three illustrations, bibliography of four titles. Résumé.

2/2

Acc. Nr: AP0046257 Ref. Code: UR 0511

PRIMARY SOURCE: Stomatologiya, 1970, Vol 49, Nr 1, pp 80-81

C

Chuprunova, I. N. -- THE INFLUENCE OF DECAMINE ON THE FUNCTIONAL ACTIVITY OF PHAGOCYTES

Summary. In a series of 60 experiments the author studied the influence of decamine (1 mg/ml, 5 mg/ml, 10 mg/ml) on the microbial absorptive and destructive function of blood phagocytes. On the basis of the data obtained a conclusion could be made that decamine influences the functional activity of phagocytes. A concentration of 1 mg/ml of decamine stimulates the absorptive and destructive capacity of phagocytes. High concentrations of decamine (5 mg/ml, 10 mg/ml) do not impede the absorptive capacity, but inhibit the destruction of microbes.

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19781375

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USSR

UDC: 669.27:548.55:539.579.4

CHUPYATOVA, L. P., KHUDYUMOV, V. G., MOROZOVA, N. P., PIKUNOV, M. V., SHISHKOV, V. V., State Scientific Research and Design Institute of the Rare Metals Industry, Institute of General Metallurgy and Physics of Metals of the Central Scientific Research Institute of Ferrous Metallurgy imeni I. I. Bardin, Moscow

"Pseudosymmetry of {110} Slip in Tungsten Single Crystals"

Moscow, Doklady Akademii Nauk SSSR, Vol 213, No 2, 11 Nov 73, pp 325-328

Abstract: A characteristic feature of the slip geometry and stress-strain curves of tungsten crystals is their strong orientation dependence: the yield point of crystals with the tension axis oriented close to [001] is considerably lower than in crystals oriented close to angle [011] of the standard triangle. This effect is usually attributed to the asymmetry of shear in plane {112}, which is typical of metals with a bcc lattice. However, research has now shown that in crystals of low-purity tungsten {112} slip is suppressed. Nevertheless the difference in yield points for

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CHUPYATOVA, L. P. et al., Doklady Akademii Nauk SSSR, Vol 213, No 2, 11 Nov 73, pp 325-328

crystals of the indicated orientations remains. In this paper the authors examine experimental data obtained on "dirty" single crystals of tungsten, and discuss the effect of "pseudoasymmetry" observed for {110} slip in such crystals. Tentative hypotheses are proposed to explain the observed effect.

2/2

1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--NEW NONMETALLIC MATERIALS FOR INSTRUMENTS -U-

AUTHOR--CHURABO, D.D.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, PRIBORY I SISTEMY UPRAVLENIYA, NO 2, 1970, PP 58-60

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--INDUSTRIAL SPECIFICATION, TECHNICAL STANDARD, POLYCARBONATE RESIN, POLYETHYLENE, CAPRONE, MOLDING MATERIAL/(U)DIFLON POLYCARBONATE RESIN, (U)KS30 9 GLASS FILLED CAPRONE, (U)VPMI MOLDING MATERIAL, (U)MS CASTING PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/2022 STEP NO--UR/0445/70/000/002/0058/0060

CIRC ACCESSION NO--AP0122251

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0122251

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTIONS AND TECHNICAL SPECIFICATIONS ARE GIVEN FOR THE FOLLOWING MATERIALS: DIFLON POLYCARBONATE; A HIGH DENSITY POLYETHYLENE; A LOW DENSITY POLYETHYLENE; THE KS-30-9 GLASS FILLED KAPRON; THE VPM-1 THERMOREACTIVE MOLDING COMPOSITION; THE VPM-2 THERMOREACTIVE MOLDING COMPOSITION; THE MS CASTING PLASTIC.

UNCLASSIFIED

1/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--NEW PHASE TRANSITION IN TRIGLYCINE SELENATE AT HIGH PRESSURES -U-

AUTHOR-(03)-MYLOV, V.P., CHURAGULOV, B.R., LEONIDOVA, G.G.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1288-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOSELENIUM COMPOUND, ORGANIC CRYSTAL, HIGH PRESSURE, THERMAL EFFECT, PHASE TRANSITION, THERMOGRAM, GLYCINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0011 STEP NO--UR/0181/70/012/004/1288/1289

CIRC ACCESSION NO--AP0132311
UNCLASSIFIED

2/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132311

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN TRIGLYCINE SELENATE CRYSTAL (NH SUB2 CH SUB2 COOH)SUB3.H SUB2 SEO SUB4 THE 1ST ORDER PHASE TRANSITION WAS INVESTIGATED AT HIGH PRESSURED BY THE DTA METHOD. IT FOLLOWS FROM THERMOGRAMS OBTAINED AT ROOM TEMP. THAT IN ADDN. TO THE KNOWN TRANSITION AT 6.5 KILOBARS THERE IS A NEW PHASE TRANSITION AT 13.6 KILOBARS. BOTH TRANSITIONS HAVE THE SAME SIGNS OF THEIR THERMAL EFFECTS. THE NEW PHASE TRANSITION IS REVERSIBLE. IT IS CHARACTERIZED BY HYSTERESIS IN PRESSURE OF APPROX. 1.5-2 KILOBARS. FACILITY: INST. FIZ. VYS. DAVLENII, USSR.

UNCLASSIFIED

USSR

UDC 629.78.015.4

MOSTOVOY, A. S., MINORANSKIY, E. I., CHURAKOV, A. A., FROLOVA, L. K.

"Theoretical Determination of Durability of A Specimen in Extension and Compression"

Tr. Kuybyshev. Aviats. In-t. [Works of Kuybyshev Aviation Institute], No 48, 1971, pp 222-230, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 2, 1972, Abstract No 2.41.185 from the Resume).

Translation: This work presents a mechanism of fatigue rupture, according to which the specimen is looked upon as a set of discrete fiber elements, exerting no pressure on each other. The linear theory of adding of fatigue damage is applied to an individual fiber. With this approach, the accumulation of damage in a fiber is determined by its stressed state, studied considering its loading history. The dependence of stress in the fiber on the rupture number of cycles, the fatigue curve for a crack, can be produced experimentally. Appearance of the first microcrack is interpreted as rupture of the most highly stressed fiber. Thus, if the time corresponding to the development of a crack is known and the process of crack propagation is described, the durability of the specimen can be calculated. 7 Figures; 2 Tables; 3 Biblio. Refs.

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USSR

UDC 539.43

MOSTOVOY, A. S., KOZLOV, A. A., FROLOVA, L. K., CHURAKOV, A. A., Kuybyshev

"Determination of Durability of Structural Elements on the Basis of Certain Concepts Concerning the Mechanism of Fatigue Rupture"

Problemy Prochnosti, No 3, 1972, pp 21-27.

Abstract: A method is presented for calculating the fatigue durability of a structural element of an aviation product manufactured of 1Kh18N10T steel. The mechanism of fatigue rupture is described by integral equations for the derivatives which are the inverse of the rates of propagation of cracks along selected coordinates. Integration of the derivatives produced yields the crack propagation time. The durability is calculated with programmed loading using damage curves produced by calculating durability with harmonic loading. The results of calculation of durability of the structural element with harmonic and programmed loads are compared with experimental results. The correspondence is quite satisfactory.

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USSR UDC 621.039.623

ALEKSIN, V. F., BIRYUKOV, O. V., GEORGIYEVSKIY, A. V., KITAYEVSKIY, L. KH., KOMAR, YE. G., LUGINOV, A. S., MALYSHEV, I. F., MUNOSZON, N. K., POPKOVICH, A. V., ROZHDESTVENSKIY, B. V., SAKSAGANSKIY, G. L., SINEL'NIKOV, the late K. D., SOKOLOV, YU. A., SUPRUNENKO, V. A., TOLOK, V. T., CHURAKOV, G. F., and SHABEL'NIKOV, L. A.

"The Experimental Thermonuclear Device 'Uragan'"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Abstract: An urgent task of stellarator research is a definitive elucidation of the reasons for anomalous diffusion in a stellarator, as well as the effect of the shear and magnetic well on the confinement of a hot and dense plasma. These questions will be studied on the "Uragan" stellarator. Construction of the "Uragan" stellarator was begun at the suggestion of I. V. KURCHATOV and completed in 1967. The physical substantiation and technical assignment of developing and constructing the complex were developed at the Physicotechnical

USSR

ALEKSIN, V. F., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Institute of the Academy of Sciences Ukrainian SSR under the direction of K. D. SINEL'NIKOV, who took an active part in the solution of theoretical and technical questions. Organizations taking part in the development of the project and the construction of the complex included the Scientific Research Institute of Electrophysical Equipment imeni D. V. Yefremov, the Elektrosila Electrical Engineering Combine, the Khar'kov Polytechnic Institute imeni V. I. Lenin, the Electromechanical Plant and NIIElektroapparat [Scientific Research Institute of Electrical Equipment] in Khar'kov. A considerable amount of work on the development, manufacture, and adjustment of the systems and components of the "Uragan" was done at the Physicotechnical Institute of the Academy of Sciences Ukrainian SSR.

The principal feature of the "Uragan" is high shear (of the order of 0.02 and 0.1) at a high level of magnetic field strength

USSR

ALEKSIN, V. F., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

H_0 (35 and 10 koe respectively). The stellarator is in the shape of a racetrack and uses a high-shear triplex helical field. The vacuum chamber of the trap consists of two semi-tori with an average radius R = 1100 mm and two rectilinear sectors, each 1725 mm long. The internal diameter of the chamber is 200 mm. On the outside of the chamber on the toroidal sectors are two helical windings and longitudinal magnetic field coils, distributed evenly along the device. The maximum strength of the magnetic field is 10 koe under steady-state conditions and 35 koe under pulsed conditions. Three windings are used; viz., longitudinal magnetic field, helical, and transverse magnetic field. All metallic elements are made of low-magnet steel 1Kh18N9T. The toroidal sectors of the vacuum chamber and part of the rectilinear sectors are made of stainless nonmagnetic alloy EP-125. The article gives a detailed description of the windings, cooling system, electric power supply system, vacuum system, and plasma diagnostic and heating system.

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USSR

UDC 669.25'295.154+532.731

YEREMENKO, V. N., and CHURAKOV, M. K., Institute for Problems of Material Science, Academy of Sciences Ukrainian SSR, Kiev

"Kinetics of Dissolving Titanium Carbide in Molten Cobalt"

L'vov, Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-June 70, pp 62-67

Abstract: A study was made of the effect of hydrodynamic conditions on the rate of dissolving titanium carbide in molten cobalt. The dissolving process was studied using a rotating disk since, owing to the diffusion "homogeneity" of the disk surface, this method makes it possible to find the true values of the dissolving rate constant. Electrolytic cobalt (99.98% pure) and titanium carbide, produced by the reduction of titanium dioxide with carbon, was used. The initial titanium carbide powder contained (wt %) 18.8 total carbon, 1.2 free carbon, 0.15 Fe, and 0.03 N, while the TiC samples contained (wt %) 19.0 total carbon, 0.15 Fe, 0.10 Co, and 0.10 N. The article contains a diagram showing how the samples are fastened and a diagram showing the unit for studying dissolving rate of solids in molten metals.

From previous experience it was established that accuracy in measuring sample height during testing was unsatisfactory for reliably determining the temperature function of the reaction rate if the time to sample rupture was restricted to two hours. Therefore, in the previous research, time to rupture was determined only

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YEREMENKO, V. N., and CHURAKOV, M. M., Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-Jun 70, pp 62-67

a. 1520°C under static conditions and at a disk angular velocity at 35 rad/sec. In the first case rupture rate (for the two-hour average testing time) was 1.7 x 10^{-3} g/cm^2-min and in the second case--2.0 x 10^{-3} g/cm^2-min. In conducting tests in pure cobalt the failure rate of titanium carbide was considerably greater. Consequently, breakdown of titanium carbide in pure cobalt can be determined by its dissolution at the sample-melt interface, and not by the breaking-off of carbide grains. The insignificant increase (10-20%) in the breakdown rate of titanium carbide in cobalt under dynamic tests in comparison with static tests reveals the comparative strength of the titanium carbide skeleton impregnated with cobalt, despite the fact that (judging from the microstructure)each titanium carbide grain in the zone of intercrystalline penetration is coated with a cobalt film. The relative strength of the sample in this zone can possibly be explained by the presence of crosslinks which bond the grains at the points where they touch a single skeleton. Upon breakdown of these crosslinks the grains at the sample surface are broken and become a part of the molten metal.

By the method of least squares the angular coefficients of linear sections of these relationships were determined and were equal to 0.48, 0.48, and 0.54 for temperatures of 1620, 1570, and 1520°C, respectively. Thus, the dissolution rate

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YERMENKO, V. N., and CHURAKOV, M. M., Fiziko-Khimicheskaya Mekhanika Materialov, No 3, May-Jun 70, pp 62-67

of titanium carbide in molten cobalt at an angular disk velocity less than or equal to 35 rad/sec can be found only by the diffusion process in molten cobalt. Significant deviations of the results from theoretical equations were caused by turbulence upon increasing the angular velocity to 62 rad/sec and by the increased effect of uncontrolled convection currents when the angular velocity was reduced to 0.8 rad/sec.

No other phases were detected in a microscopic study of the TiC-Co interface, but the possibility of selective dissolving of one of the carbide components and enrichment of the surface layer by the other component was not ruled out since titanium carbide has a wide region of homogeneity. To check this assumption, a layer of cobalt was removed from the sample using a solution of ammonium persulfate, while the lattice parameters on the titanium carbide surface were determined by back-reflection photography. A comparison of the diffraction patterns taken from the dissolved and undissolved surface showed that the change of lattice parameter after testing was within the limits of experimental error ($\pm$0.002Å). Thus, composition of the sample surface remains unchanged and, consequently, selective dissolving of one of the components does not occur. Energy of dissolution

USSR

YEREMENKO, V. N., and CHURAKOV, M. M., Fiziko-Khimicheskaya Makhanika Materialov, No 3, May-Jun 70, pp 62-67

activation, calculated according to the temperature relationship of the given dissolving rate, was 31±7 kcal/mol.

USSR UDC 539.194

CHURAKOV, V. V., STEPANOV, B. I.

"Effect of Resonance Exchange Between the Levels 10°0 and 02°0 on the Amplification Coefficient of a Weak Signal in a CO_2 Amplifier"

Minsk, Zhurnal Prikladnoy Spektroskopii, No. 1, Jan 72, pp 49-53

Abstract: The amplification coefficient is calculated in a CO_2 amplifier considering resonance exchange between the levels 10°0 and 02°0. It is noted that an expression was derived for the amplification coefficient of a weak signal in the rotation-vibration band. It was assumed in the calculation that the rate of rotational relaxation was considerably greater than the rate of vibration relaxation, and the results obtained agree with experimental data; however, direct application of these results to CO_2 lasers is complicated since there is exchange between the 10°0 and 02°0 vibration levels in the CO_2 molecule. If the rate of transition from the 10°0 level to the 02°0 level and the reverse is sufficiently great, the initial assumption is not satisfied; it is known from the literature that the rate of rotational relaxation in lasers is of the order of 10^7 $sec^{-1} \cdot torr^{-1}$ and it was found that the lower limit of the rate of energy

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200610015-4"

USSR

CHURAKOV, V. V., STEPANOV, B. I., Zhurnal Prikladnoy Spektroskopii, No. 1, Jan 72, pp 49-53

transfer from the 10°0 level to the 02°0 level was 10^6 $sec^{-1} \cdot torr^{-1}$. It was for this reason that resonance exchange was considered for a more exact determination of the rate of rotational relaxation from the measured amplification coefficient of a weak signal in the experiment. It is stated that the data obtained can be used to interpret experimental results and evaluate the rates of rotational relaxation and resonance exchange on the basis of these results.

2/2

USSR

CHURAKOV, Ye. P.

"Determination of the Position of Sources of a Discrete Random Field on the Basis of the Instantaneous Realization of the Field"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 6, pp 50-53 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V270, by the author).

Translation: The nature of placement of sources forming a discrete random field is determined on the basis of the instantaneous realization of the field under conditions of noise. The solution is reduced to use of discrete filters acting as selective smoothing devices with subsequent testing of hypotheses.

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USSR UDC 535.853.089+621.326.75

SMOLKIN, I. K., FEDOROVA, Ye. P., CHURAKOVA, R. S.

"Miniature High-Stability Infrared Radiation Source"

Optiko Mekhanicheskaya Promyshlennost', No 12, 1972, p 69.

Abstract: The authors have developed a small ceramic infrared light source with indirect heating. The source has a spectral radiative capacity in the 5-50 μ range at up to 1,300°C similar to that of silicon carbide, without its main defects: it does not require forced cooling, is small, has reliable silver contacts and consumes only about 50 w electric power. The source is simple in design: it consists of a ceramic radiating tube 3 mm in diameter and 40 mm long and a platinum spiral heater inside the tube. Repeated measurements showed that after a 30-minute warmup period, if the ceramic light source was protected from air currents, the stability of the light flux produced was within limits of 0.1% for 15 minutes and 0.3% per day.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200610015-4"

USSR

UDC: 621.396.677

CHURILOV, V. P., KHLOPOV, G. I., Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Some Particulars in the Design of Cassegrainian Antennas for the Millimeter Wavelength Range"

Moscow, Radiotekhnika, Vol 27, No 8, Aug 72, pp 104-106

Abstract: The paper presents the results of an experimental study of the radiation patterns of a two-dish Cassegrain antenna (diameter of the large dish 1100 mm, $f/D = 0.45$) operating on a wavelength of 4 mm as a function of certain structural peculiarities of the small dish and the exciter. An annular choke groove ¼-wavelength deep on the edge of the small dish prevents excitation of the "unexposed" surface of the dish and reduces the level of short-range lateral radiation by an average of 7-8 dB in the region of solid angles where the accuracy of the aperture method decreases. A conical flange added to the hyperbolic surface of the small dish appreciably reduces the mean-square level of long-range lateral radiation due to improved interception of the power from the exciter. The authors thank B. M. Minkovich for constructive criticism.

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USSR UDC 666.764.32

CHURAKOVA, R. S., and FEDOROVA, YE. P., All-Union Institute of Refractory Materials

"Influence of Preliminary Heat Treatment of Aluminum Oxide on Heat Resistance and Strength of Corundum Ceramic"

Ogneupory, No. 2, 1971, pp 44-49

Abstract: The influence of the temperature of preliminary roasting of alumina on the microstructure of corundum materials and their properties is studied. Dense materials with various properties are produced from alumina preliminarily roasted at various temperatures: apparent density from 3.67 to 3.89 g/cm^3, heat resistance from 2-33 heating and cooling cycles, and bending strength from 1210 to 2400 kg/cm^2. The use of a combination of initial aluminas with different roasting temperatures (combination of G-1750 and G-1600 aluminas) has a favorable influence on the heat resistance. The high heat resistance of the material results from the formation of regular, disordered, and densely-packed corundum crystals.

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USSR

UDC 666.764.32.001.5

CHURAKOVA, R. S., and FEDOROVA, YE. P., All-Union Institute of Refractories

"Study of the Process of Drying Parts From Finely-Dispersed Aluminum Oxide"

Moscow, Ogneupory, No 8, 70, pp 36-39

Abstract: The effect of acid treatment of finely disperse alumina and corundum on the formation of aluminum hydrates and oxychlorides has been studied. The experiment involved G-00 grade alumina and white electrolytically produced EB corundum. The materials were ground on a vibratory grinding mill to a particle size of 2.5--3.5 microns, and then treated with hydrochloric acid to remove iron impurities. After the acid treatment, the unroasted alumina was found to contain up to 3% hydrates and oxychlorides. Materials roasted at high temperatures showed only traces (0.1%) of hydrates

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USSR

CHURAKOVA, R. S., And FEDOROVA, YE. P., All-Union Institute of Refractories, Ogneupory, No 8, 70, pp 36-39

and oxychlorides which had no appreciable effect on the drying of the finished products. It was found that 93.5% of the total moisture contained in the product escaped within 30--50°C. A rational method of drying the finished products is proposed, which specifies a temperature rise within 30--50°C at 1.5 deg/hr. The yield of usable goods after drying and final roasting is 95%. It is recommended that the drying and subsequent roasting be performed continuously.

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USSR

UDC 532.74

(1)

DERYAGAN, B. V., Corresponding Member Academy of Sciences USSR, AORIN, Z. M., LAPUTINA, I. P., RABINOVICH, YA. I., and CHURAYEV, N. V., Institute of Physical Chemistry, Academy of Sciences USSR, and Institute of the Geology of Ore Occurences, Petrography, Mineralogy and Geochemistry, Academy of Sciences USSR, Moscow

"A Study of the Composition of Modified Water by Means of an Electron Probe"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 101-104

Abstract: Samples of modified H_2O that were obtained by condensation of H_2O vapor in quartz, capillaries, on quartz powder, or on plane quartz surfaces were subjected to analysis by means of an electron probe. The content of non-volatile extraneous substances was determined that were isolated by evaporation of the modified H_2O on a Cr surface. The modified H_2O contained one or several of the elements Na, C, K, Cl, S the compounds of which can form true solutions. In cases in which these elements were absent, the modified H_2O contained a sol or gel of silicic acid. The results indicated that the anomalous properties of modified water can be explained without taking recourse
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USSR

(1)

DERYAGIN, B. V., et al, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 101-104

to the hypothesis of formation of polymeric H_2O on quartz surfaces, which was advanced before the presence of impurities in the water in question had been established. To arrive at a definite solution of the problem of a quantitative explanation of the properties of modified H_2O, the molecular composition of modified water will have to be investigated. It has been established that H_2O introduced in the liquid state into capillaries did not show a raised content of Si or Na. The raised content of these elements in modified H_2O can be explained by a higher solution capacity of freshly condensed H_2O. The authors thank I. I. Belyayeva, V. V. Berezkin, B. V. Zheleznyy, N. N. Zakhavayeva, A. I. Izmaylova, V. V. Karasev, D. S. Lychnikov, M. A. Prusakov, V. Kh. Simonova, V. D. Sobolev, and Ye. N. Khromova for preparing samples and assisting in the experiments.

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USSR

UDC 546.212

DERYAGIN, B. V., and CHURAYEV, N. V., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"The Problem of 'Anomalous Water'"

Moscow, Kolloidnyy Zhurnal, Vol 35, No 4, Jul-Aug 73, pp 814-815

Abstract: Results of analytical examinations of the composition of anomalous condensates show that their properties can be explained by the presence of impurities, without resorting to the hypothesis of "polymeric water."

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Water and Water Treatment

USSR

UDC 543.3:537.533.35+537.533.73

DERYAGIN, B. V., YEVKO, E. I., KISIN, V. I., LUK'YANOVICH, V. M., RABINOVICH, YA. I., GHURAYEV, N. V., and BARONOVA, R. V., Institute of Physical Chemistry, Academy of Sciences USSR; and Institute of Crystallography imeni A. V. Shubnikov, Academy of Science USSR

"Electron Diffraction Study of Modified Water"

Moscow, Doklady Akademii Nauk SSSR, Vol 208, No 3, 1973, pp 603-605

Abstract: Modified water (m.w.) was prepared by three processes on a quartz film in order to study the "anomalous component" (a.c.), e.g. that part of the m.w. which is nonvolatile at room temperature. The bulk of the sample is amorphous. The polytypic character of the different crystalline modifications of the a.c., seen earlier in electron micrographs and ascribed to impurities of Na^+ and K^+, was evident in the electron diffraction patterns; in the latter case, however, it could not be correlated with Na^+ or K^+. It was thus assumed that the crystalline part was composed of different contaminants. The diffraction pattern, autoradiographs of tritiated samples, and electron micrographs are included.

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USSR

UDC 532.62

DERYAGIN, B. V., Corresponding Member of the Academy of Sciences USSR, and CHURAYEV, N. V., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Disjoining Pressure Isotherm of Water Films on the Surface of Quartz"

Moscow, Doklady Akademii Nauk SSSR, Vol 207, No 3, 1972, pp 572-575

Abstract: The state of liquid films can be described with the aid of disjoining pressure isotherms $h(\Pi)$, connecting the film thickness h with the pressure Π which is in effect in the film and is excessive compared to the bulk phase of the same liquid. The $h(\Pi)$ isotherm for water films on the surface of quartz is S-shaped for the case of incomplete wetting. It is important to determine if it is possible, by using the idea of various disjoining pressure components, to give a quantitative description of the course of the isotherm, including the $\Pi < 0$ region. The electrostatic, molecular, and structural components are considered. It is found that the stability of thin water films (at $h < 110$ Å) is actually determined by one component only

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USSR

DERYAGIN, B. V., and CHURAYEV, N. V., Doklady Akademii Nauk SSSR, Vol 207, No 3, 1972, pp 572-575

-- the structural component of the disjoining pressure Π . The sign of the component of disjoining pressure Π changes with a decrease in α -film thickness.

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USSR

UDC 532.696

ZOLOTAREV, P. P., and CHURAYEV, N. V., Institute of Physical Chemistry Acad. Sc. USSR, Moscow

"The Effect of Polymolecular Adsorption on the Diffusion of Vapors in Microcapillaries. I. Phenomenon Theory"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1123-1126

Abstract: An approximation theory for the diffusion of vapors in fine cylindrical capillaries is described with consideration of polymolecular adsorption. Starting from the observation that vapor diffusion in porous bodies is accompanied by their desorption on the surface of pores, it has been proposed to use individual fine cylindrical capillaries instead of porous bodies in the studies of diffusion with concurrent adsorption; in such a case the effect of capillary condensation can be disregarded. The simplicity of the geometry of porous volume leads to a quite accurate quantitative comparison with theory in case of relatively wide capillaries with radii $\gg 10^{-5}$ cm; for finer pores a correction is needed due to the mobility of the boundaries.

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USSR

UDC 532.696

ZORIN, Z. M., SOBOLEV, V. D., Churayev, [redacted] N. V., Institute of Physical Chemistry, Acad. Sc., USSR, Moscow

"The Effect of Polymolecular Adsorption on the Diffusion of Vapors in Microcapillaries. II. Experimental Data"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1127-1129

Abstract: Experiments were carried out to check on the theory of vapor diffusion in fine cylindrical capillaries reported in the preceeding paper. Quartz microcapillaries with internal diameter 10^{-5}-10^{-3} cm were used. A 10-15 cm long capillary sealed on both ends was placed horizontally, with one end immersed in liquid nitrogen bath. The other end was then immersed in a bidistillate, the movement of the liquid being observed through a microscope. When the water reached the cold zone it froze and the movement stopped. Then the other end of the capillary was sealed off and the system placed in a thermostatically controlled container to reach an equilibrium. Experimental data obtained agreed well with those calculated from proposed theoretical considerations.

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USSR

UDC 543.123.11+532.74

SPITSYN, V. I., GLAZUNOV, M. P., MULYAR, V. M., DERYAGIN, B. V., CHURAYEV, N. V., and ZORIN, Z. M., Institute of Physical Chemistry Academy of Sciences USSR, Moscow

"Study of the Anomalous Water by the Method of Neutron Activation Analysis"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 132-135

Abstract: Samples of anomalous water were studied for their content of admixtures which could possibly be leached out of the glass; particularly Si and Na, after irradiation with thermal neutrons. As a preliminary experiment quartz glass itself was examined. The Na impurities were found to be low, and irregularly distributed throughout the capillary. The anomalous water samples were compared to double distilled water. It was established that the admixture concentration was much higher in the anomalous samples than in the double distilled material. The content of Si and Na was inversely proportional to the volume of the sample studied. This could be due to the evaporative procedures used, the impurities being introduced from the surface layer of the capillaires, from the evaporation equipment, etc. Temperature doesn't seem to have any particular effect on the content of impurities. The quantity of the anomalous components in the samples of anomalous water varied in the range of $5 \cdot 10^{-3}$ to $5 \cdot 10^{-8}$ g.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THERMAL STABILITY OF MODIFIED WATER -U-

AUTHOR-(05)-DERYAGIN, B.V., ZORIN, Z.M., RABINOVICH, YA.I., TALAYEV, M.V., CHURAYEV, N.V.
COUNTRY OF INFO--USSR

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2/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124369

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL STABILITY OF MODIFIED WATER WAS STUDIED BY USING THE METHOD OF DISTN. THROUGH A THERMAL BARRIER (D., 1967). THE RESULTS SHOW THAT THE ANOMALOUS COMPONENT OF THE MODIFIED WATER DECOMPS. TO FORM ORDINARY WATER. THE BOND ENERGY FOR THE MOLS. OF THE ANOMALOUS COMPONENT WAS EVALUATED BY MEANS OF THE BATLER-POLYANI EQUATION (1962) AND FOUND TO BE 50 KCAL-MOLE. THE HIGH THERMAL STABILITY OF THE ANOMALOUS COMPONENT MOLS. EXPLAINS THE STABILITY OF THE MODIFIED WATER, THE PROPERTIES OF WHICH DO NOT CHANGE EVEN DURING PROLONGED STORAGE. FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

USSR UDC 532.74

VIKTORINA, M. M., DERYAGIN, B. V., Corresponding Member of the USSR Academy of Sciences, YERSHOVA, I. G., ZNAMENSKIY, B. V., and CHURAYEV, N. V.

"Paramagnetism of Modified Water (Water II)"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 114-116

Abstract: This article contains a description of a microcapillary procedure for measuring the magnetic susceptibility of volumes of liquid on the order of 10^{-6} to 10^{-7} cm^3 which is a modification of the well-known Gouy method. The procedure was checked by measuring the magnetic susceptibility of a column of benzene; ordinary water (bidistillate) was used as the standard liquid. Analogous measurements were then made for modified water. On the basis of the preliminary experiments only a qualitative conclusion of paramagnetism of the anomalous component could be drawn. It was visually apparent that upon inclusion of the magnetic field, the columns of sufficiently concentrated modified water and the columns of ordinary water shifted to different sides in the capillaries. Results of one of the last series of experiments, in which some quantitative estimates could be made, are presented in a table. For columns of modified water with a low content of

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200610015-4"

USSR

VIKTORINA, M. M., et al, Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 114-116

anomalous component, the magnetic susceptibility was greater than $-0.38 \cdot 10^{-6}$. The mechanism of the effect of the anomalous component is discussed in detail, and a formula is derived for using the presented data to make a rough estimate of the magnetic susceptibility of pure anomalous component (water II). Using this formula, a value of $7 \cdot 10^{-6}$ was obtained.

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USSR UDC: 541.12.013.5

DERYAGIN, B. V., Corresponding Member Academy of Sciences USSR, ZORIN, Z. M., RABINOVICH, YA. I., ~~TALAYEV~~, M. V., (DECEASED) and CHURAYEV, N. V., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR
TALAYEV

"Thermal Stability of Modified Water"

Moscow, Doklady Akademii Nauk, SSSR, Vol 191, No 4, Apr 70, pp 859-861

Abstract: The authors confirmed the results obtained in preliminary experiments that at temperatures $\geq 700^{\circ}$ modified water (M.W.), which consists of two components -- anomalous component (A.C.) and normal water -- decomposes converting to normal water. Initially changes in expansion of water columns were studied in temperatures of 250 and 400° and both cases gave similar curves, separated in accordance with the temperature difference. Next distillation of the M. W. across a heat barrier was carried out and it was shown that up to 500° no noticeable changes occur. At 700° the condensate looked like normal water, indicating that thermal decomposition of M.W. occurs at $t \geq 700^{\circ}$. On the basis of their experimental data the authors calculated the bond energy of A.C. molecules to be about 50 kcal/mole.

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Acc. Nr: AT0039903 Abstrac CHEMICA

CHURAYEV Ref Code: N.V. 2
4-76 UR0020

83434e Dependence of water vapor pressure on the concentration of the anomalous component in modified water. Deryagin, B. V.; Zheleznyi, B. V.; Rabinovich, Ya. I.; Simonova, V. Kh.; Talaev, M. V.; Churaev, N. V. (Inst. Fiz. Khim., Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190(2), 372–5 [Phys Chem] (Russ). The so-called modified water, defined as a 2-component system, one of which is ordinary water and the other referred to as "anomalous component" of which the nature is unknown for the present, was studied. The anomalous component is less volatile, its diffusion coeff. is smaller, its d. is greater, and its n and mol. wt. are appreciably greater than of ordinary water. The mol. wt. of the anomalous component was detd. exptl. as 200 ± 50 and by a method of computation as 180 ±50. For the present, these values given for mol. wt. are merely tentative upper limit values. The changes observed in modified water upon removal of one of the components are completely reversible. The state of complete modification of water, i.e. a state in which the water is satd. with the anomalous component, is equally reversible; however, the time required for attaining equil. may be several days or even weeks. M. Hoseh

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MAKAROV, N. V., GERASIMOVA, T. N., CHURAYEVA, A. M., BABINA, Z. N.

"Effect of Potassium Iodide on the Dispersion of a Photographic Emulsion and the Solubility of Silver Halide"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970, Nature of Photographic Sensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 309-312 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1345)

Translation: It is shown that the average area of the projection of AgBr(I) crystals of a photoemulsion of the ammonia type changes with an increase in the concentration of KBr similar to the change in the solubility of AgHal in the presence of I^- and NH_3 ions; a study of solubility therefore makes it possible to establish the change in dispersion of the emulsions. The solubility

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USSR

MAKAROV, N. V., et al, Mezhdunar. kongress po fotogr. nauke, Moskva, 1970.

[illegible], no place of publication given, Vneshtorgizdat, no year given, pp 309-312

curve of AgHal has a maximum, the shape, height, and position of which depend on the KI concentration, so that at the maximum the ratio of Br^- and I^- ion concentration is close to the ratio of the solubility products of AgBr and AgI. The formation of silver iodide complexes (Ag_3I^{2+}, AgI_2^-, $Ag_2I_4^{2-}$, etc.) effecting the solubility of AgHal in the presence of ammonia occurs only for a KI concentration above 0.1 mol/l, i.e., in the range of concentrations not applicable in the synthesis of emulsions. A. L. Kartuzhanskiy.

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USSR

UDC: 621.317.755:535.312

CHURBAKOV, A. I.

"Method of Designing High-Speed Photorecorders with Image Mirror Scanning"

Moscow, Izmeritel'naya tekhnika, No. 11, 1970, pp 36-38

Abstract: This paper proposes a method for finding the parameters of the circumference replacing the curve of the external branch of the Pascal spiral at three points, a procedure required for construction of photorecorders. In this method, the defocusing at the opposite edges of the focal arc of the instrument is equal in amount but opposite in sign while the defocusing in the rest of the arc is close to that at the edges but without exceeding it. An accompanying diagram shows how these points are located. Analysis of the change in scanning velocity in modern Soviet photorecorders of the FR-30, ZhLV-1, SP-111, ZhFR-1, SFR, and ZhFR-2 types has shown that the change in scanning speed along the film must be taken into account in making accurate time measurements. This can be done by tables or special graphs, examples of which

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USSR

CHURBAKOV, A. I., Izmeritel'naya tekhnika, No 11, 1970, pp 36-38

are given. A table is given from which the parameters of the replacing circumference can be determined with high accuracy. A mathematical relation is found for computing the scanning velocity from the replacing circumference.

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USSR UDC: 621.317.3:[621.315.61+621.315.592]

URYVSKIY, Yu. I., SYNOROV, V. F., CHURIKOV, A. A., POPOV, V. A., KONONOV, V. I., LAVRENT'YEV, K. A., MASLENNIKOV, P. N.

"Ellipsometric Method of Checking Dielectric and Semiconductor Films"

Elektron. prom-st'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 2, pp 82-83 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12A393 by A. K.)

Translation: The ellipsometric inspection method is distinguished by high information capacity and resolution: It enables simultaneous measurement of the thickness and index of refraction of the film on a substrate during production with accuracy of up to 1 nm and 0.05 respectively. The method is based on determining the change in parameters of polarized light reflected from the surface being studied.

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USSR UDC: 532.595.2

CHURIKOV, F. S., KOKINASIDI, P. D.

"On the Shape of Pipelines in Water Hammer Theory"

Nauchn. tr. Krasnodar. politekhn. in-t (Scientific Works of Krasnodar Polytechnical Institute), 1970, vyp. 30, pp 26-29 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7B591)

Translation: The paper presents water hammer equations in characteristic variables for pipes of variable diameter and variable wall thickness. With the aid of a previously developed method, the coefficient in the transformed equation is selected so that the Riemann function can be used. It is shown that for the special case where the rate of propagation of water hammer along the pipe is constant, the pipe must have the shape obtained by rotating a hyperbola. In addition, five approximations are given for the characteristic of a pipeline. These approximations correspond to the condition of variable parameter and variable wall thickness. I. A. Chernyatin.

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USSR

UDC 621.039.53

KUROLENKIN, Ye. I., BURDAKOV, N. S., VIRGIL'YEV, Yu. S., OSTROVSKIY, V. S., TURDAKOV, V. N., CHURILOV, Yu. S.

"Influence of Oxidation on Strength Properties of Graphite"

Atomnaya Energiya, Vol 32, No 4, Apr 72, p 312.

Abstract: This short article studies the influence of the degree of oxidation on compressive strength and on volumetric weight, characterized by porosity, for two commercial types of structural graphite, types GMZ and MPG. Studies were performed using cylindrical graphite specimens, 8 mm in diameter and 80 mm long, which were oxidized in an electric furnace in air at 700°C. The degree of oxidation was determined by weight loss of the specimen. It was found that at a 600-800°C oxidation temperature, the drop in volumetric weight occurs primarily in the surface layer. This agrees with the two-stage mechanism of oxidation of graphite, showing that in this temperature interval the process is intermediate between kinetic and diffusion processes. Graphs are presented showing the change in compressive strength and volumetric weight of the graphite with degree of oxidation.

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USSR UDC 546.26-162:539.1.04

KUROLENKIN, YE. I., VIRGIL'YEV, Yu. S. and CHURILOV, Yu. S.

"Changes in the Submicroporosity of Structural Graphite Following Irradiation"

Moscow, Izvestiya Akademii nauk SSSR, Neorganicheskiye materialy, Vol 8, No 1, 1972, pp 80-83

Abstract: The study described here deals with the effect of irradiation conditions (temperature and integral flow) on both the formation and redistribution of submicroporosity (radius of inertia, volume and specific pore area) in GMZ graphite. The graphite specimens were irradiated in airtight steel ampoules at temperatures of up to 800°C and dosages up to 7.10^{24} n/cm^2. Narrow-angle x-ray scattering was used to measure the submicroporosity. The porosity of the GMZ graphite is classed into groups whereby the finer pores of ~200 Å are responsible for volumetric crystal growth. On exposure to irradiation, the volume of the finer pores decreases with an increase in dosage. This effect is markedly decreased with increasing irradiation temperatures. (4 illustrations, 5 biblio. references)

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USSR UDC: 621.039.531:536.21:661.666

VIRGIL'YEV, Yu. S., BURDAKOV, N. S., MART'YANOV, V. G., and CHURILOV, Yu. S.

"Change in Heat Conductivity of Graphite Under Radiation"

Moscow, Atomnaya energiya, No. 3, March 1971, pp 311-312

Abstract: By generalizing the available data including that obtained by the authors themselves, this article seeks to find a relationship between the change in heat conductivity of graphite, important as a construction component, and the radiation temperature and dosage. Under irradiation, the heat conductivity drops sharply, with the maximum rate of drop occurring at the initial period of the irradiation and decreasing with increasing radiation temperature. The heat conductivity measurements were made on specimens 8 mm in diameter and 10 mm in height by means of a comparative method in which a standard was used in the temperature interval of 20-120° C, with a measurement accuracy of ±5%. Results of the measurements are shown in a curve of the heat conductivity of various brands of Soviet graphite, before and after irradiation, as a function of the temperature. A second curve gives the change in graphite heat resistance as a function of radiation temperature. From their experiments, the authors derive an empirical expression for the change in heat conductivity

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VIRGIL'YEV, Yu. S., et al, Atomnaya energiya, No. 3, March 1971, pp 311-312

as a function of the irradiation dosage and temperature, with the damaging effects on the graphite taken into account.

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UDC 621.385.633

USSR

BOGOMOLOV, G. D., BORODKIN, A. I., KUSHCH, V. S., LEVIN, G. YA., RUSIN, F. S., CHURILOVA, S. A.

"Investigation of the Excitation System of the 'Comb' Type in an Orotron Regime and a Backward-Wave Tube Regime"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 1, pp 97-102 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A141)

Translation: An experimental comparison is made between the work of an orotron [microwave oscillator with oscillatory system in the form of an open resonator--Transl.] and a backward-wave tube. The comparison was accomplished on a model of a millimeter band oscillator in which backward-wave tube and orotron oscillations were excited. The dispersion and control characteristics of both forms of oscillations were investigated and also the levels of the power being generated were compared. The stability of both forms of collector [K] is evaluated. 9 ref. Summary.

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USSR

UDC 621.385.633

BOGOMOLOV, G. D., BORODKIN, A. I., KUSHCH, V. S., LEVIN, G. YA., RUSIN, F. S., CHURILOVA, S. A.

"Investigation of the Excitation System of the 'Comb' Type in an Orotron Regime and a Backward-Wave Tube Regime"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 1, pp 97-102 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A141)

Translation: An experimental comparison is made between the work of an orotron [microwave oscillator with oscillatory system in the form of an open resonator--Transl.] and a backward-wave tube. The comparison was accomplished on a model of a millimeter band oscillator in which backward-wave tube and orotron oscillations were excited. The dispersion and control characteristics of both forms of oscillations were investigated and also the levels of the power being generated were compared. The stability of both forms of collector [K] is evaluated. 9 ref. Summary.

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AA0044624

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243246 CONDENSER FOR MEASURING DIELECTRIC CONSTANT OF GASES is proposed, incorporating thermal compensation by way of controlled movement of the mercury forming the condenser plate, on heating, so as to correct capacity values. The body 1 is threaded at 2 into a thermostatic chamber; 4,5 are cooling water nipples, 6 for attachment of exhaust pump or inert gas bottles. For testing aggressive gases a quartz ampoule 7 contains mercury, forming the inner condenser plate; the upper part 9 is empty. The outer plate is formed of mercury 10, filled before assembly. Textolite flange 13 and rubber washer 14 seal the top. The stainless steel electrode 17 ends in a steel tubular element 22 screening cavity 9. Its length and the quantity of mercury are chosen so that the capacity of the

AUTHORS: Churin, G. V.; Rogozyanov, A. Ya.; Gromov, V. I.

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19771306

AA0044624

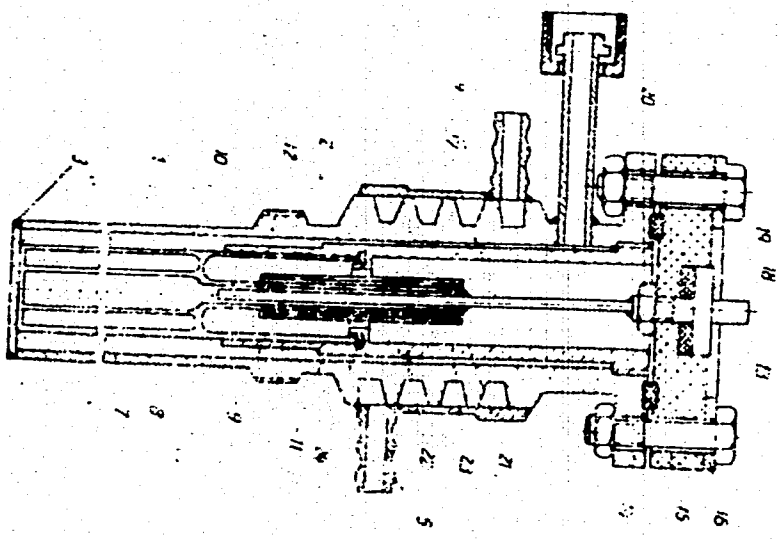
condenser does not change on heating without a test gas. Packings 2 ,24 prevent the fall of mercury into the cavity. Cavity 12 serves as a reservoir for the mercury expanding on heating in 10; there is no electrical field at 12, thus no effect on capacity. The penetration of mercury from the inner plate into 9 on heating provides a negative thermal coefficient depending on the geometry of the mercury and steel tube levels, which can be calibrated for each condenser before use. The negative coefficient will then compensate for increasing capacitance on heating, due to linear expansion of the metal components. Thus full stability of the empty condenser on heating is assured.

18.7.66 as 1092235/25-25.G.V.CHURIN et alia.(23.9.69) Bul 16/5.5.69. Class 421. Int.Cl.G 01n.

2/3

19771307

AA0044624



5/3

19771308

USSR

UDC 621.376.234

AKIMOV, YU. K., ANDERT, K., KALININ, A. I., CHURIN, I. N., SHURAVIN, V. N.

"Time Measurements with a Germanium Detector"

Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 51-54

Abstract: The basic factors determining the time resolution of semiconductor detectors are 1) the occurrence of time fluctuations as a result of superposition of signals on noise from the detector and amplifier; 2) shifting of the circuit response time on variation of the signal amplitude and 3) dependence of the response time on variations of the collection of free charge carriers in the detector with time. These factors were considered when developing the described low-noise preamplifier with a buildup time of 5 nanoseconds and a high-speed shaper with compensation of the dependence of the time resolution on the amplitude dispersion and variations in the pulse front for time measurements with a germanium detector. When recording γ-quanta from ^{60}Co by a germanium detector with a volume of 3 cm^3 included for coincidence with a scintillation counter, a time resolution of 2.2 nanoseconds was obtained in the energy range of 0.07-1.33 megaelectron volts. The width of the coincidence curve on the 0.1 level of its height was 12.5 nanoseconds. A time resolution of 0.9 nanoseconds was obtained in a narrow energy range.
1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--INCREASE OF PRECISION AND PERFORMANCE OF MACHINES WITH PROGRAM CONTROL -U-
AUTHOR-(03)-RATMIROV, V.A., CHURIN, I.N., SHMUTER, S.L.

COUNTRY OF INFO--USSR

SOURCE--INCREASE OF PRECISON AND PERFORMANCE OF MACHINES WITH PROGRAM CONTROL (POVSHENIYE TOCHNOSTI I PROIZVODITEL'NOSTI STANKOV S PROGRAMMNYM
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--AUTOMATIC CONTROL SYSTEM, PROGRAMMED AUTOMATIC CONTROL, MACHINE INDUSTRY/(U)SPID CONTROL SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1725 STEP NO--UR/0000/70/000/000/0001/0342

CIRC ACCESSION NO--AM0130582
UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AM0130582

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3. CHAPTER I. CHARACTERISTICS OF MACHINES WITH PROGRAM CONTROL 5. II. GUIDE OF MACHINES WITH PROGRAM CONTROL 84. III. SCREW NUT GEARS IN FEED DRIVES OF MACHINES WITH PROGRAM CONTROL 139. IV. SELFADJUSTING SYSTEMS IN MACHINES WITH PROGRAM CONTROL 176. V. ANALYSIS OF FEED DRIVE SYSTEM 219. VI. COMPENSATION OF ERRORS OF "SPID" SYSTEM DURING PROGRAM DESIGN 273. APPENDIXES 296. I. TECHNICAL DATA OF MACHINES WITH DIGITAL PROGRAM CONTROL AND SYSTEMS OF CONTROL 296. II. TABLES FOR DESIGNING GUIDES AND SCREW NUT GEARS 312. III. FOREIGN PATENTS ON SYSTEMS AND UNITS OF PROGRAM CONTROL WITH MACHINES 328. LITERATURE 333. THE BOOK PRESENTS QUESTIONS OF INCREASING PRECISION IN DESIGN OF MACHINES WITH PROGRAM CONTROL AND MAINTENANCE OF THEM DURING OPERATION. THE BOOK WAS INTENDED FOR ENGINEERS, WORKING ON DIGITAL CONTROL BY MACHINES. IT MAY ALSO BE USED BY SPECIALISTS OF ALLIED AREAS OF TECHNOLOGY AND SCIENTIFIC WORKERS OF MECHANICAL ENGINEERING INSTITUTES.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--RESOLUTION OF THE SPECTRAL ANGULAR DISTRIBUTION FUNCTION FOR GAMMA QUANTA RADIATION SOURCES -U-

AUTHOR--CHURIN, S.A.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(1), 50

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--GAMMA SPECTRUM, RADIATION SOURCE, CESIUM ISOTOPE, ANGULAR DISTRIBUTION, CALCULATION, VECTOR FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1231 STEP NO--UR/0089/70/028/001/0050/0050

CIRC ACCESSION NO--AP0115248

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0115248

ABSTRACT/EXTRACT--(U) GP-0- ANGULAR DISTRIBUITO VECTOR PRESENTED; CALCD. DATA ARE PRIME137 CS SOURCE.

ABSTRACT. AN EXPRESSION FOR THE SPECTRAL FOR POINT ISOTROPIC GAMMA SOURCES IS IN GOOD AGREEMENT WITH EXPTL. DATA FOR A

UNCLASSIFIED

CHURIN, YU. A. Microelectronics.

JPRS 57333
25 October 1972

MICROELECTRONICS

Excerpts from Russian-language book edited by F. V. Lukin; Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House, Moscow, UDC 621.382:621.396.6-181.5.

CONTENTS

logic (TTL) of monolithic integrated circuits and possessing commensurability with typical logic elements of low-power TTL of the integrated circuit. Evaluations are given for the possibility of accomplishing, on the basis of the suggested difference control element, variations of typical integrated subsystems in the TTL base.

The article contains 11 figures, 2 tables, and 6 bibliographic references.

UDC 681.325.65

Evaluation of the Influence of Echoes on the Distortion of Information Signals in Systems Using Integrated Circuits of Transistor-Transistor Logic (TTL). Dolkart, V.M., Kovsh, G.Yh. and Redina, S.F., in the Collection "Mikroelektronika", edited by F.V. Lukin, No 5, p 227, Sovetskoye Radio Publishing House, 1972.

Construction of reliable computer systems and devices on high-speed integrated circuits is possible only with the proper solution to the problem of matching integrated circuits with the connecting transmission lines. The article evaluates distortions in information signals in transmission lines connecting integrated circuits of the transistor-transistor logic.

The article contains 10 figures and 3 bibliographic references.

UDC 621.382.8.621.372.2

Propagation of Impulses in Nonuniform Lines With Variable Parameters. Gurevich, G.S. and Orlikovskiy, A.A. In the Collection "Mikroelektronika", edited by F.V. Lukin, No 5, p 243, Sovetskoye Radio Publishing House, 1972.

For a nonuniform line with variable parameters of a common type the authors establish the relationships for the duration of the impulse and the rate of propagation of the fronts. They obtain expressions for energy, current, voltage, and power of an infinitely fine impulse. They evaluate the energy of an impulse of finite duration. The obtained results permit justifiably continuing computation of the interelement connections of major integrated circuits and designing of integrated circuits with the conversion of the impulse duration and distributed amplification.

The article contains 1 figure and 4 bibliographic references.

UDC 681.325.65

Analysis of the Operation of a Logic Element Type ESTL on a Transmission Line. Churin, V.A. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 250, Sovetskoye Radio Publishing House, 1972.

The article analyzes the interaction between a high-speed logic element type ESTL (transistor logic on emitters) with connected emitters) and length of the lines. In view of the complexity of the system its investigation is done by a numerical method using a computer.

The article gives the results of numerical computation indicating the influence of the parameters of the circuit on the distortion of the transmitted signals. On the basis of this analysis the author gives recommendations for selecting the allowable length of the matched and unmatched connections in several specific cases.

The article contains 10 figures and 5 bibliographic references.

UDC 621.382.8-0.9.4

The Question of Interblock Bonds of Digital Equipment on Integrated Circuits of Transistor-Transistor Type. Avayev, N.A. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 267, Sovetskoye Radio Publishing House, 1972.

The author cites data on the parameters of lattice-type impulse noises generated in the interblock communication lines of digital equipment on integrated circuits of transistor-transistor logic (TTL). He examines a circuit with elevated noise stability, intended for reception from communication lines constructed on the basis of standard integrated circuits appearing in the TTL series.

The article contains 5 figures and 7 bibliographic references.

UDC 621.382.6

Selection of a Constant Current Source in Logic Circuits for Current Switches. Romudrov, V.G., Strukov, V.N., and Shishkevich, A.A. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 275, Sovetskoye Radio Publishing House, 1972.

To ensure the required noise stability in integrated circuits for current switches, especially in multilevel cir-

USSR UDC 550.83:622.241:681.3

GORIN, A. Z., and CHURINOVA, I. M., Central Geophysical Expedition of the Ministry of the Petroleum Industry

"Perfecting of the Program and the Technology of the Operational Interpretation of Industrial-Geophysical Data on Electronic Computer"

Moscow, Neftegazovaya Geologiya i Geofizika, No 9, 1973, pp 3-6

Abstract: Information is given of the experimental-industrial perfecting , started in the year 1970, of programs of processing industrial-geophysical data on electronic computers of BESM-4 and M-222 types. The Ts-1 complex of programs of operational interpretation with the yield of a plastic table was introduced into production. Since the Ts-1 complex operation analyses revealed a series of indicated imperfections, the improved Ts-2 complex of operational interpretation is now in the development at the All-Union Scientific Research Institute of Geophysical Exploration Methods. It proceeds from the necessity to include programs providing an interpretation of the processing of industrial-geophysical and geological data by a separate slit and into

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200610015-4"

USSR

GORIN, A. Z. and CHURINOVA, I. M., Neftegazovaya Geologiya i Geofizika, No 9, 1973, pp 3-6

a solc storage system. The technological schema of the operational interpretation by the Ts-2 complex of programs is demonstrated. This new developed control program performs not only the function of subsequent call of processing programs but it secures also the call from the magnetic band of intermediate tables needed for the work of each program and their return. Five bibliographic references.

2/2

1/2 021 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--KINETICS OF MULTICOMPONENT REACTIONS AT METAL SLAG INTERFACE -U-

AUTHOR-(03)-CHURKIN, A.S., TOPORISHCHEV, G.A., YESIN, O.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(2), 5-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--IRON OXIDE, MANGANESE OXIDE, MANGANESE, SULFUR, SLAG, CALCIUM OXIDE, ALUMINUM OXIDE, MAGNESIUM OXIDE, MULTICOMPONENT CHEMICAL MIXTURE, DESULFURIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/1907 STEP NO--UR/0148/70/013/002/0005/0009

CIRC ACCESSION NO--AT0114347

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AT0114347
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THE SIMULTANEOUS PRESENCE OF MN, MNO, AND FEO ON THE DEGREE. OF DESULFURIZING, Z, OF CAST IRON, FE-C SUBSAT-MN-S, WAS STUDIED FOR A SLAG CONTG. CAO 41.5, AL SUB2 O SUB3 52.8, MGO 5.7, AND FEO PLUS MNO 0.2PERCENT. INCREASING THE CONCN. OF MN, (MN), IN THE METAL INCREASED Z. INCREASING (MN) (1.95-4.2PERCENT) INCREASED Z SHARPLY AND REDUCED THE PERIOD IN WHICH THE MAX. DEGREE OF POSSIBLE DESULFURIZATION, THETA, WAS ATTAINED. THE EFFECT OF (MN) WAS GREATER THAN WITH THE CONCN. OF MN IN THE SLAG (MN). THE EXPTL. RESULTS WERE CORRELATED WITH VALUES CALCD. BY USING EQUATIONS DEVELOPED PREVIOUSLY (CHURKIN, ET AL., 1969). INCREASING (FEO) INCREASED THETA. INCREASING (MN) LOWERED THE PARTICIPATION OF FEO IN THE TRANSFER OF S FROM THE METAL TO THE SLAG. THE ADDN. OF MNO TO THE SLAG LOWERED THE RATE OF DESULFURIZATION. FACILITY: URAL. POLITEKH. INST., SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CONCERNING OPTIMAL CONTROL OF THROTTLE HYDRO ACTUATOR -U-

AUTHOR--CHURKIN, G.M.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEKHANIKA, 1970, NR 3, PP 183-185

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATHEMATICAL SCIENCES

TOPIC TAGS--OPTIMAL AUTOMATIC CONTROL, HYDRAULIC ACTUATOR, FLUIDIC CONTROL DEVICE, SECOND ORDER DIFFERENTIAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1457 STEP NO--UR/0103/70/000/003/0183/0185

CIRC ACCESSION NO--AP0106213

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106213

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE IS SOLVED THE PROBLEM OF THE SYNTHESIS OF AN OPTIMAL BY ITS QUICK RESPONSE SYSTEM OF CONTROLLING A THROTTLE HYDRO ACTUATOR THE MOVEMENT OF WHICH IS DESCRIBED BY A SECOND ORDER NONLINEAR EQUATION WITH DISCONTINUED PART. THE STRUCTURAL SCHEME OF THE SYSTEM IS PRESENTED.

UNCLASSIFIED

Epidemiology

UDC 616.91

USSR

POPOV, H. V., Candidate of Medical Sciences; MAGAZNOV, A. M.; CHURKIN, G. S., Lt Col Med Serv

"Focus of Hemorrhagic Fever With Renal Syndrome"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 71-72

Abstract: In Tambovskaya Oblast, hemorrhagic fever with a renal syndrome (HFRS) was first recorded in 1965 (two cases). Since the disease reappeared in 1967, epidemiological and epizootiological studies were initiated in that year. The HFRS focus is located between the mixed forest zone and the chernozem steppe with wheat, corn, and sugar beet fields where the groundwater level is high. The forest is a convenient zoological habitat. The village where seven HFRS cases were recorded in 1967 and 1968 is located in a small, neatly kept clearing in the forest. All patients were persons employed on construction work in the forest and working directly with underbrush and building material refuse. The area was highly infested with murine rodents with

USSR

POPOV, N. V., et al, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 71-72

the common vole most numerous (about 50% of all murine rodents caught). Serological tests performed on these animals revealed the presence of HFRS antibodies in 59.4% of common voles during outbreak periods, and in 11% of common voles and in 3.7% of field mice during disease-free periods. Morbidity among the workers occurred only during periods when the number of common voles inhabiting that area was high. The data indicate that the disease was transmitted from common voles to men working with refuse material polluted by these rodents. The above-described area seems to be the only focus, and a relatively young one, of HFRS in Tambovskaya Oblast.

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USSR UDC 616.61-002.26:616.92/.93

CHURKIN, G. S., Lt Col Med Serv; POPOV, N. V., Lt Col Med Serv, Candidate of Medical Sciences; MAGAZNOV, A. M.

"Using the Complement-Fixation Reaction to Detect Antigen of the Agent of Hemorrhagic Fever With a Renal Syndrome"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 7, 1971, p 81

Abstract: The complement-fixation test, with serum from convalescent animals as immune serum and a chloroform extract from the kidneys, lungs, spleen, and liver as antigen, was performed in foci of hemorrhagic fever with a renal syndrome as a means of early detection of the disease among rodents and other small animals. Examination of the organs of 552 animals (493 caught in foci of the infection and 59 in places free of the disease) revealed C.F.T.-positives only in the organs of animals caught in foci of the infection. Antigen was found in almost 40% of animals.

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USSR

UDC 621.372.44:621.318.134

CHURKIN, V.I., CHELISHCHEV, N.N., IZOTOV, V.A.

"An Experimental Study Of The Interaction Of A Nonlinear Ferrite Resonator With The Field Of A Short-Circuited Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 5, May 1972, pp 1076-1077

Abstract: The results are presented of a study of the amplitude and phase characteristics of the interaction of a nonlinear ferrite resonator with the microwave field of a short-circuited waveguide. The case is considered where coupling of the resonator with the transmission line in a linear regime is most critical. The experiment was conducted at a frequency of 3000 MHz at room temperature when the maximum of absorption for a monocrystalline spherical specimen of yttrium iron garnet coincides with the ferromagnetic resonance. 2 fig. 4 ref. Received by editors, 28 April 1971.

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1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--CONCERNING OSCILLATIONS OF HYDRAULIC THROTTLING POWER UNIT WITH FEEDBACK AND TIME DELAY -U-

AUTHOR--CHURKIN, V.M.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEKHANIKA, 1970, NR 2, PP 175-181

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--HYDRAULIC ACTUATOR, OSCILLATION, NEGATIVE FEEDBACK, NUMERIC SOLUTION, CONTROL SYSTEM STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1964 STEP NO--UR/0103/70/000/002/0175/0181

CIRC ACCESSION NO--AP0054762

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054762

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OSCILLATIONS OF A HYDRAULIC POWER UNIT WITH A RIGID FEEDBACK ARE CONSIDERED. THE HARMONIC LINEARIZATION METHOD IS USED FOR THE ANALYSIS. THE BOUNDARIES OF THE EXISTENCE OF PERIODIC AND NON PERIODIC OSCILLATIONS ARE DETERMINED WITH TAKING INTO ACCOUNT THE CAVIATION RESTRICTIONS, THE STABILITY OF SUCH OSCILLATIONS IS INVESTIGATED AND THE PARAMETERS OF AUTO OSCILLATIONS ARE DETERMINED. THE RESULTS OBTAINED AND THE RESULTS OF THE NUMERIC CALCULATION OF THE INITIAL SYSTEM OF THE EQUATION OF THE UNIT MOVEMENT ARE COMPARED ON A CONCRETE EXAMPLE.

UNCLASSIFIED

USSR

UDC 8.74

DOLGOV, A. I., CHURKIN, V. N.

"Constructing Control Tests of Methods of Matching Component Tests"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb. (Automation Devices and Systems. Republic Interdepartmental Thematic Scientific and Technical Collection), 1972, vyp. 24, pp 89-98 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V489)

Translation: A study was made of a procedure for selecting the input effects forming the control tests for multilevel logical networks without feedback and branch points made up of arbitrary components of the combination type having one output. A method is proposed for constructing the tests based on finding sensitive paths through the known component tests.

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USSR

UDC 536.24 :532.526

RUMYNSKIY, A. N., CHURKIN, V. P.

"Numerical Solution of the Problem of Radiant Heat Exchange on the Frontal Surface of a Blunt Body"

V sb. 2-y Mezhdunar. kollokvium po gazodinamike. 1969. Sekts. po chisl. metodam v gaz. dinamike (Second International Colloquium on Gasdynamics. 1969. Section on Numerical Methods in Gasdynamics -- Collection of Works), Moscow, 1969, p 34 (from RZh-Mekhanika, No 5, May 70, Abstract No 5B878)

[No abstract]

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USSR UDC: 621.372.544.3(088.8)

CHURKIN, Ye. I., Moscow Electrical Engineering Institute of Communications

"An Active Filter"

USSR Author's Certificate No 253253, filed 19 Feb 68, published 26 Feb 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D38 P)

Translation: An active filter is proposed which contains a series circuit comprised of a first converter, passive narrow-band filter, second converter, passive wide-band filter, and third converter. The second input of the third converter is connected to a local oscillator. To achieve predetermined dynamic properties independently of the filtration band, the output of the third converter is connected to the second input of the first converter through the passive narrow-band filter, and to the second input of the second converter through the passive wide-band filter.

1/1

USSR UDC 621.646.3(088.8)

VORONIN, G. I., PEDOSEYEV, R. YU., CHURKIN, YU. A.

"Regulator of Air Flow"

USSR Author's Certificate No 236882, filed 1 Sep 67, published 23 Jun 69 (from RZH-Metrologiya i Izmeritel'naya Tekhnika, No 1, Jan 70, Abstract 1.32.733 P)

Translation: In order to increase its accuracy, the proposed regulator is equipped with air stream intensifier whose two inputs are connected with a converging device, two outputs -- with element of comparison, and the feed nozzle -- with a pipeline to the slave mechanism.

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USSR

UDC: 547.7/.8

CHURKIN, YU. D. and PUTOKHIN, N. I.

"Interaction of Magnesium-Organic Compounds with α,β-Unsaturated Ketones of the Thiophene Series"

Khimiya. Sb. nauchn. tr. Kuybyshevsk. politekhn. in-t (Chemistry. Collected Scientific Works of Kuybyshev Polytechnical Institute), pp 116-124, Kuybyshev, 1969 (Translated from Referativnyy Zhurnal Khimiya, No 2, 25 Jan 70, Abstract No 2 Zh294)

Translation: Crotonic condensation of RCHO (I R = aryl, thienyl) with MeCOR' (II R' = thienyl, aryl) in the presence of NaOH produces RCH = CHC(O)R' (III). (III) and R'-MgBr (IV R' = aryl, thienyl) are used to synthesize RR'CHCH$_2$C(O)R' (V); the mechanism of this reaction was studied. 0.1 Mol (II) (R' = β-naphthyl) are added to a mixture of 50 ml 10% NaOH in 50 ml alcohol, then 0.1 mol (I) [R = thienyl-2' (A)], the mixture is agitated 3-4 hours at 22-27°, cooled, after 10-12 hours (III) is filtered off (R = A, R' = β-naphthyl), $C_{17}H_{12}OS$, yield 72%, m.p. 96.5-7° (MeOH); 2,4-dinitrophenylhydrazone, $C_{23}H_{16}N_4O_4S$, m.p. 217° (chloroform-iso-PrOH); semicarbazone (SMC) $C_{18}H_{15}N_3OS$, m.p. 243° (alcohol). A solution of 0.05 mol (III) (R = A, R' = Me) in absolute ether is added at a temperature

USSR

CHURKIN, YU. D. and PUTOKHIN, N. I., Sb. nauchn. tr. Kuytyshevak. politekhn. in-t (Chemistry, Collected Scientific Works of Kuybyshev Polytechnical Institute), pp 116-124, Kuybyshev, 1969 (Translated from Referativnyy Zhurnal Khimiya, No 2, 25 Jan 70, Abstract No 2 Zh294)

of <0° (in a bath) to a mixture of 0.08 mol Mg and 0.08 mol RBr (VI R = Ph) in absolute ether, the mixture is heated 1.5 hours, cooled (ice), diluted with a saturated solution NH Cl, extracted with ether, washed with water, and a saturated solution of $NaHCO_3$, the ether is evaporated, and from the residue (V) is produced (R = A, R' = Me, R" = Ph (Va), $C_{14}H_{14}OS$, yield 47.4%, m.p. 193-5°/2, 263-8°/12-3, $n^{20}D$ 1.6243; SMC, $C_{15}H_{17}N_3OS$, m.p. 236-7°. Similarly, of equimolecular quantities of Mg, (III) and (VI) in ether, the corresponding (V) is produced (given are R, R', R", empirical formula, yield in %, b.p. in °C/mm, m. p. in °C, empirical formula of SMC, m.p. in °C): A, Me, A, $C_{12}H_{12}OS_2$, 22, -, 166-7, $C_{13}H_{15}N_3$ OS, 248.5-9; Ph, A, Ph, $C_{19}H_{16}OS$, 59, -, 176-6, $C_{20}H_{19}N_3$ OS, 236-7; A, A, Ph (Vb), $C_{17}H_{14}OS$, 52.5, -, 179-81, $C_{18}H_{17}OS_2$, 238-9; A, A, A, $C_{15}H_{12}OS_3$, 63.3 -, 95-6, $C_{16}H_{15}N_3OS_3$, 225-6; A, Ph, Ph (Vc), $C_{19}H_{16}OS$, 51, 237-9/9, 76-7, $C_{20}H_{19}N_3OS$, 233; A, Ph, A,

USSR

CHURKIN, YU. D. and PUTOKHIN, N. I., Sb. nauchn. tr. Kuytyshevak. politekhn. in-t (Chemistry, Collected Scientific Works of Kuybyshev Polytechnical Institute), pp 116-124, Kuybyshev, 1969 (Translated from Referativnyy Zhurnal Khimiya, No 2, 25 Jan 70, Abstract No 2 Zh294)

$C_{17}H_{14}OS_2$, 48.5, -, 78.5-9.5, $C_{18}H_{17}N_3OS_2$, 232-2.5; α-naphthyl, A, Ph, $C_{23}H_{18}OS$, 50, 280-305/10, 103-4, $C_{24}H_{21}N_3OS$, 238-9; A, A, α-naphthyl, $C_{21}H_{16}OS_2$, 55.5, 270-90/5, 108-8.5, $C_{22}H_{19}N_3OS_2$, 236-7; A, Ph, α-naphthyl, $C_{23}H_{18}OS$, 74, -, 152-3, $C_{24}H_{21}N_3OS$, 242-3; Ph, Ph, β-naphthyl, $C_{25}H_{20}O$, 44.5, 280-300/7, 122-2.5, $C_{26}H_{23}N_3O$, 240-1; A, β-naphthyl, Ph, $C_{23}H_{18}OS$, 52, -, 158-8.5, $C_{24}H_{21}N_3OS$, 237-7.5. Counterflow synthesis from (III) (R = Ph, R' = Me) and AMgBr (VII) produces (Va), yield 48.7%; from (VII) and (III) (R = Ph, R' = A), (Vb) is produced, yield 46.2%; from (VII) and (III) (R = R' = Ph), (Vc) is produced, yield 40.5%.

N. Chupriyanova

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1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--POSSIBLE OCCURRENCE OF A DISTURBANCE IN THE INDEPENDENCE OF COMPOUND NUCLEUS DECAY FROM THE ENTRANCE CHANNEL SPIN -U-

AUTHOR-(04)-KARADZHEV, K.V., MANKO, V.N., NERSESYAN, A.N., CHURKREYEV, F.YE.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(2), 88-92

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--COMPOUND NUCLEUS, NUCLEAR SPIN, ANGULAR DISTRIBUTION, RADIOACTIVE DECAY SCHEME, PARITY PRINCIPLE, NUCLEAR RESONANCE, PROTON BOMBARDMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REFL/FRAME--1988/0704 STEP NO--UR/0386/70/011/002/0088/0092

CIRC ACCESSION NO--AP0105678

UNCLASSIFIED

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2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105678

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENTS OF THE ANGULAR DISTRIBUTIONS OF REACTIONS ON NUCLEI WITH NONZERO SPIN MAKE IT POSSIBLE TO VERIFY THE INDEPENDENCE OF THE DECAY MODE OF A COMPD. NUCLEUS ON THE ENTRANCE CHANNEL OF THE REACTION. THE CASE OF A WELL ISOLATED, SINGLE RESONANCE WITH AN ANGULAR MOMENTUM AND A PARITY J PRIMEPI IS CONSIDERED AS FOUND IN THE INTERACTION OF A N WITH A TARGET NUCLEUS HAVING SPIN I. IN THIS CASE, THE DIFFERENTIAL CROSS SECTION OF THE REACTION (A,B) IS AN INCOHERENT MIXT. OF 2 PARTS CORRESPONDING TO 2 ENTRANCE CHANNELS WITH THE SPINS I EQUALS MINUS ONE HALF AND I EQUALS PLUS ONE HALF. FROM THE INDEPENDENTLY MEASURED ANGULAR DISTRIBUTIONS OF A RESONANCE, THE EXACT PARAMETER OF SPIN MIXING T IS OBTAINED. ONE OF THE SIMPLEST CASES IS CONSIDERED; WHEN THE BOMBARDING PARTICLES ARE P, THE SPIN AND THE PARITY OF THE TARGET NUCLEUS IS ONE HALF PLUS, AND THE STATE OF THE COMPD. NUCLEUS HAS AN ANGULAR MOMENTUM AND A PARITY OF 1 MINUS. THIS STATE CAN BE CREATED ONLY BY THE CAPTURE OF P WITH AN ORBITAL MOMENTUM OF L SUBP EQUALS 1. IN THIS CASE, THE ORBITAL MIXING IN THE ENTRANCE CHANNELS OF THE REACTION IS ABSENT. IN THE REACTIONS (P,P), (P, ALPHA), AND (P,GAMMA) ON A PRIME31 P NUCLEUS, A SINGLE ISOLATED NARROW RESONANCE WAS FOUND THAT HAD A MOMENTUM AND A PARITY OF 1 MINUS AT AN ENERGY OF THE INCIDENT P OF 2114 KEV. DISCREPANCIES IN THE VALUES OF T SUBP, T SUBALPHA, AND T SUBGAMMA INDICATE THAT THE DECAY OF A COMPD. NUCLEUS MAY DEPEND ON THE ENTRANCE CHANNEL. FACILITY: INST. AT. ENERG. IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 51

SYROV, Yu. P., CHURKVEIDZE, Sh. S., ARBATSKIY, G. M., TRUFANOV, V. V.

"On Optimizing Intersectoral and Interregional Communications in Planning the Development of a United National Economic System"

Sb. tr. In-t mat. Sib. otd. AN SSSR (Collected Works. Institute of Mathematics, Siberian Department, Academy of Sciences of the USSR), 1971, vyp. 2(19), pp 138-168 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V501)

[no abstract]

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--LABORATORY INSTRUMENT FOR EVALUATING THE ANTIWEARING PROPERTIES OF MOTOR OIL, HYDRAULIC FLUID, AND JET FUEL -U-

AUTHOR-(04)-FILATOV, P.G., KLIMOV, K.I., CHURSHUKOV, YE.S., YERMOLOV, F.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 2, 1970, PP 54-56

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PROPULSION AND FUELS, METHODS AND EQUIPMENT

TOPIC TAGS--PHYSICS LABORATORY INSTRUMENT, LUBRICATING OIL, HYDRAULIC FLUID, JET FUEL, TEST METHOD, FRICTION TEST, ANTIWEAR ADDITIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1870 STEP NO--UR/0122/70/000/002/0054/0056

CIRC ACCESSION NO--AP0130697

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CIRC ACCESSION NO--AP0130697

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF A UNIT INITATING THE WORK OF REAL FRICTION PAIRS WITH SEQUENTIAL RECIPROCATING MOTION. ANTIWEARING PROPERTIES ARE DETERMINED IN THE VOLUME OF FILM OF THE FLUIDS TESTED. PROCEDURES FOR EVALUATING THE ANTIWEARING PROPERTIES OF OILS AND FUELS ARE DEVELOPED. THE ORIGINAL ARTICLE HAS TWO TABLES, TWO ILLUSTRATIONS, AND FOUR BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CORROSION PROPERTIES OF HYDROFINED REACTIVE FUELS UNDER CONDITIONS OF WATER CONDENSATION -U-
AUTHOR-(02)-CHURSHUKOV, YE.S., STEKHUN, A.I.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 17-19

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--PETROLEUM REFINING PROCESS, CORROSION RATE, WATER, LIQUID FUEL, HYDROREFINING

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DOCUMENT CLASS--UNCLASSIFIED
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